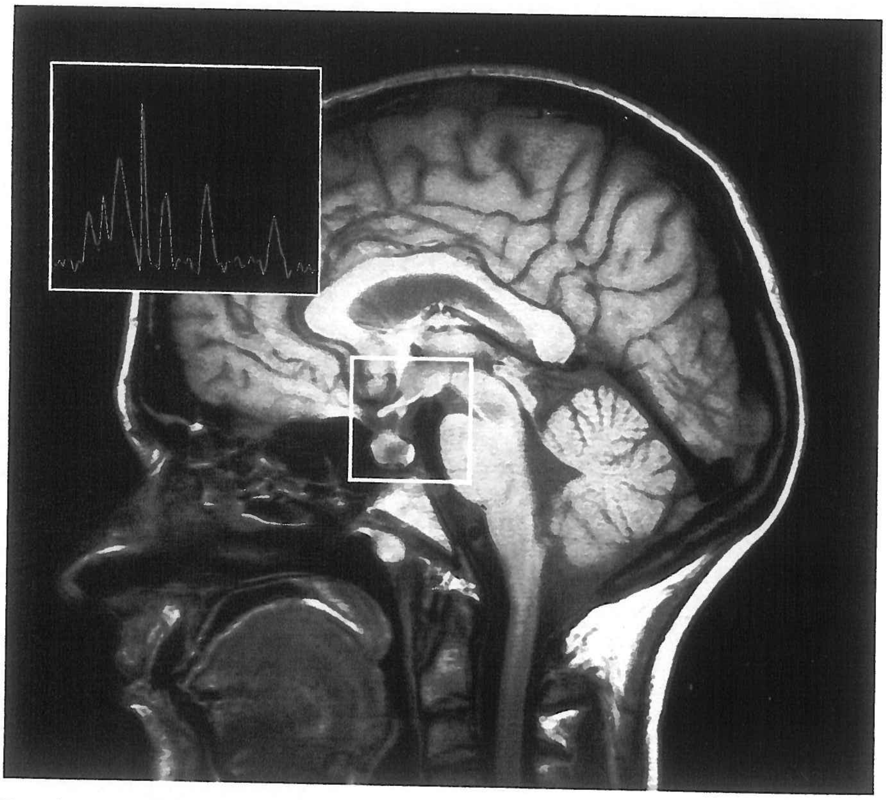
Biomag '93 Vienna

Aug. 14-20

Final Programme

GYROSCAN
S15/ACS,
das System für
Top-Bildgebung,
Spektroskopie
und Forschung



Der MR für Forschung und Klinik

GYROSCAN S15/ACS ist das Gerät der Wahl für Institute, an denen geforscht wird. Aber es ist keine reine Forschungsmaschine, sondern ein Hochleistungssystem für die klinische Routine.

- ▶ **Sub-Sekunden-Bilder** im FASTSCAN-Betrieb
- ▶ **Bildlokalisierte Spektroskopie,** sofort und ohne Umrüstung
- ▶ **Flexible Oberflächenspulen** zur freien Positionierung am Patienten
- ▶ **AUTOSHIM-Betrieb** für extreme Magnetfeld-Homogenität
- ▶ **Freestyle-Scan,** eine neue Dimension der Bildgebung

Philips Medizinische Systeme

PHILIPS

UNIVERSITY OF VIENNA
ALMA MATER RUDOLPHINA

9th INTERNATIONAL CONFERENCE ON BIOMAGNETISM

VIENNA, AUSTRIA

August 14—20, 1993

FINAL PROGRAMME

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Cover: University of Vienna — Alma mater Rudolphina — founded 1365 as seen from the "Mölkerbastei". Photo: G. Wünsch

ADVISORY COMMITTEE

Chair: M. Hoke, MD, Münster, Germany

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S. J. Williamson, PhD, New York, NY, USA

SCIENTIFIC COMMITTEE

Chair: L. Deecke, MD, Vienna, Austria

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H. Weinberg, PhD, Burnaby, BC, Canada
S. J. Williamson, PhD, New York, NY, USA

ORGANIZING COMMITTEE

L. Deecke, MD, Vienna, Austria
C. Baumgartner, MD, Vienna, Austria
Vienna Medical Academy

WELCOME

Dear friends and colleagues of the Biomag community,

Vienna, the city of Franz Mesmer (1734—1815), is inviting the Biomagnetism community from all over the world to gather within her walls during August 14—20, 1993. As president of the 9th International Conference of Biomagnetism I have the great pleasure to welcome you in Vienna for an intensive exchange of scientific data, ideas, theories, models and technical innovations. The venue is the University of Vienna — our Alma Mater Rudolphina, founded in 1365 only two years after the first university of German language had been established in Prague.

We try to maintain the tradition of this series of conferences in putting emphasis on present and future clinical applications of the SQUID technique. Search for applications, however important for biomagnetism, should not hamper fundamental research in our field, in order to avoid biases in our strive for innovations. One never knows whether pure science eventually arrives at data that find an application formerly unexpected.

The topics are covering the following 4 categories: 1. Brain (with subheadings as: General Aspects, Epilepsy, Clinical Studies, Visual, Auditory, Somatosensory and Motor System, Cognition and Spontaneous Brain Activity; 2. Heart (with subheadings as: Basic Electrophysiology, Functional Localization, Ventricular Tachycardias, WPW-Syndrome, Cardiac Risk Analysis, Fetal Magnetocardiogram, Inverse Solutions, 2D-Cardiac Tissue, Modeling, Injury Currents); 3. Peripheral Nerve, Gastroenterology, Basic Research and Biosusceptometry; 4. Modeling and Instrumentation. This means that we have a neuro-category a cardio-dominated category and a theoretical and technological category.

We hope that we have set up an interesting conference covering a wide range of topics and offering ample opportunities to share experiences with fellow colleagues of various disciplines in order to steer our young discipline into permanent magnetism.

I think it is not necessary to praise Vienna. This traditional formerly imperial European metropolis is magnetic enough to attract the Biomag fans and camp-followers from all over the world. Let us meet — not only at the university — but also on the banks of the blue Danube, in the Spanish Riding School, the cathedral, the imperial court and castles, the parks and gardens, the museums and let us enjoy all the other cultural treasures, this city in the heart of Europe has to offer.

Welcome in Vienna!

Lüder Deecke, M.D.
President Biomag '93

THE UNIVERSITY OF VIENNA

Today's main university building was constructed by the architect Heinrich von Ferstel during the years 1873—1883 in the style of the Italian Renaissance. The story says that the building, which covers 14.500 square meters, is located exactly at the site which half a millenium before had been designated by Rudolf IV for the Alma Mater Rudolphina founded by him.

The pediment of the projecting central section on the frontside of the building features a sculptural work by J. Tautenhay: "The Birth of Athena", goddess of wisdom), and the grafittos decorating the backside show mythological scenes. The monument in the entrance hall (Josef Müllner, 1924), is dedicated to the victims of World War I. The large main courtyard with its marble Kastilia Fountain (Edmund Hellmer, 1910) is surrounded by arcades. There the busts of famous professors have been set up, among them a bust of Gerhard van Swieten, a work by Franz Xaver Messerschmidt (1769). The large ceremonial hall is 20 m high, on the ceiling a painting by Franz Matsch, "Victory of Light over Darkness", and allegorical representations of the university faculties.

Selected data on the history of the university of Vienna

From the Beginnings to the Present Time

1365 Founding of Vienna University by Duke Rudolf IV: Alma Mater Rudolphina Confirmation by Pope Urban V with exception of the theological faculty

1384 Reform and enlargement by Duke Albrecht III:
Founding of the Theological Faculty
Establishment of the Collegium ducale
Allocation of 680 pounds "pfenning" out of the toll collected at Emmersdorf on the Danube

1501 Maximilian I founds the Collegium poetarum et mathematicorum as "Faculty of the Humanities"

1554 "Reformatio nova":
Ferdinand I introduces the position of paid full professors and strengthens the position of the sovereign's superintendent.
Provisions for sufficient founding of the university

1624 Emperor Ferdinand II lays the foundation stone for the new building of the academic college ("Jesuitenkolleg")

1661 First "Promotio sub auspiciis imperatoris" in Vienna
1749 Maria Theresian reforms carried out by Gerhard van Swieten, introduction of public directors of studies, far-reaching restrictions of academic privileges
1754 First bedside teaching
1783 Abolition of University Jurisdiction
German becomes the teaching language
1827 Enlargement of the University Library
1838 Reform of academic nations (Austrian, Slavic, Hungarian, Italian-Illyric nations)
1878 Admission of female guest students
1864 Inauguration of the new main building on the Ringstraße (architect Heinrich von Ferstel)
1911 New University Hospitals (Spitalgasse 23)
1914-18 The main building is turned into a military hospital
1938 Take-over of the university by the Nazi-Regime, expulsion of Jews and political opponents from the teaching staff and the student population and their deportation
1945 26 bombs hit the main building
Reopening of the university on May 29th
1975 University Organization Act: 8 Faculties (catholic theological, protestant theological. law, social and economic sciences, medicine, basic and integrative sciences, humanities, formal and natural sciences)
1983 First conference of the Danube Universities in Vienna
1989 The City of Vienna donates the Old General Hospital (AKH) to the University
1990 625th anniversary of the founding of the University of Vienna

The Vienna University is proud of the following Nobel prize winners who studied or taught here:

Robert Bárány, medicine, 1914
Julius Wagner-Jauregg, medicine, 1927
Karl Landsteiner, medicine, 1930
Erwin Schrödinger, physics, 1933
Viktor Franz Hess, physics, 1936
Otto Loewi, medicine, 1936
Konrad Lorenz, medicine, 1973

GENERAL INFORMATION

Venue:	University of Vienna, Alma Mater Rudolphina Dr. Karl-Lueger Ring 1, A-1010 Vienna Phone: (+43/1) 406 87 98
Language:	The official conference language is English
Local Organization:	Conference Chairman: L. DEECKE, Vienna Scientific Secretary: C. BAUMGARTNER, Vienna Neurologische Universitätsklinik Wien Währinger Gürtel 18—20, A-1090 Vienna, Austria Phone: (+43/1) 40 400/31 10, Fax: (+43/1) 40 400/31 41
Enquiries and Registration (until Friday, August 13, 1993):	Secretariat 9th International Conference of Biomagnetism c/o Wiener Medizinische Akademie Alser Straße 4, A-1090 Vienna, Austria Phone: (+43/1) 42 13 83, Fax: (+43/1) 42 13 83-23 cables: Medacad Wien, telex: 134743 medak a
Travel, Accommodation and Social Programme:	MONDIAL CONGRESS Faulmanngasse 4, A-1040 Vienna, Austria Phone: (+43/1) 58 80 40-0, Fax: (+43/1) 56 91 85
Commercial Exhibition:	Medizinische Ausstellungs- und Werbegesellschaft m. b. H. Freyung 6, P.O.B 155, A-1010 Vienna, Austria Phone: (+43/1) 533 29 35, 533 23 20, Fax: (+43/1) 535 60 16
Important Note:	As of Saturday, August 14, 1993 the Administrative Secretariat, the Travel Agency Mondial Congress as well as the Exhibition Management will be located at the Congress venue: University of Vienna, Dr. Karl Lueger Ring 1, A-1010 Vienna. Phone: (+43/1) 406 87 98

GENERAL INFORMATION

Official Opening Hours:

Saturday,	August 14, 1993	12.00—18.00
Sunday,	August 15, 1993	8.00—18.00
Monday,	August 16, 1993	8.00—18.00
Tuesday,	August 17, 1993	8.00—13.00
Wednesday,	August 18, 1993	8.00—18.00
Thursday,	August 19, 1993	8.00—18.00
Friday,	August 20, 1993	8.00—18.00

Publications:

A conference digest containing the two-page abstracts will be handed out to the participants upon registration at the registration desk.
Invited papers and contributed papers which passed peer review will be published in a volume "Advances in Biomagnetism 93".

Name Badges

will be needed for admission to all scientific and social events

Certificate of Attendance:

A certificate of attendance is available at the registrations desk. Certificates can be picked up from Monday, August 16, 1993.

Future Conferences:

The 10th International Conference on Biomagnetism will be held in Los Alamos, New Mexico, USA in 1995. Proposals for the site of the 11th International Conference in 1997 should be submitted to the Secretariat as soon as possible so they may be considered by the Advisory Committee prior to being proposed to the participants during the Vienna conference. Proposals should describe the conference facilities, maximum number of participants that can be accommodated, available financial support, local personnel who will form the organizing committee, and other relevant aspects of the organization.

Committee Meetings:

Advisory Committee, Sunday, August 15, 1993, 18.00
Scientific Committee, Monday, August 16, 1993, 12.30

GENERAL INFORMATION

Posters:

Posters should measure 90 cm in width and 1,5 m in height. Posters were ordered in groups. Each group will be displayed throughout one day.

Mounting: 8.00— 8.30 hrs
Removal: 18.00—18.30 hrs

Pins, tapes, etc, will be available. Our staff will help you wherever necessary.

Slide:

Single and double-projection
Slides (50 mm x 50 mm) must be fitted in glasses, plastic or metal frames. Paper frames are not acceptable. Slides should be handed over to one of the technicians in the Slide Center. He/She will bring then the slides to the lecture hall. Please collect your slides after the session at the Slide Center.

Car Parking:

Next to the Congress venue there is a public parking garage.

Local Transportation:

From the Vienna-Schwechat airport the hotels within the city can be reached by the „Schnellbahn“ (high speed railway), airport-bus or taxi-cab (approx. 30 minutes). From the railway stations the City of Vienna can be reached by either the „Schnellbahn“, by the underground (U-Bahn) or by tramway. All hotels as well as the Congress venue, University of Vienna and the City Hall may be reached by public transportation.

REGISTRATION FEES (in Austrian shillings)

Participants	AS 3.400,—
Accompanying Persons	AS 700,—

The registration fee for participants includes: access to all scientific events, coffee-breaks, welcome cocktail, and receipt of the Congress portfolio containing all Congress documents. Payment of registration fee in addition entitles participants to attend the Cocktail at the City Hall given upon invitation by the Mayor of the City of Vienna.

Registration fee for accompanying persons includes: the welcome cocktail and one city tour "Historical Vienna". In addition accompanying persons are invited to join the Cocktail Reception at the City Hall given upon invitation by the Mayor of the City of Vienna.

On site registration

may be made at the congress venue during the official opening hours of the registration desk.

SPONSORS

Bundesministerium für Wissenschaft und Forschung
Wiener Tourismusverband

Aesca, Wien
Gerot Pharmazeutika, Wien
Merck, Wien
Serono, Wien

the Congress was also supported by:
Julius Meinl AG, Wien

EXHIBITORS

Ärztezentrale Adressen- und Drucksortenverlag, Helferstorferstraße 2, A-1014 Vienna

Amuneal Manufacturing Corp., 4737 Darrah Street, U.S.A.-19124-2705 PA Philadelphia

Biomagnetic Technologies GmbH, Grüner Weg 83, GER-52070 Aachen

CTF Systems Inc., 15-1750 McLean Avenue, CDN-BC V3C 1M9 Port Coquitlam

Imedco AG, Industriestraße 211, CH-4600 Olten

Neuromag Ltd. c/o Low Temperature Laboratory, Helsinki University of Technology
Rakentajanaukio 2, SF-02150 Espoo

Neuro Scan Inc., 1035 Sterling Road, Suite 103, U.S.A.-VA 22070-3806 Herndon

Siemens Aktiengesellschaft, Bereich Medizinische Technik, Henkestraße 127, GER-91052 Erlangen

Vacuumschmelze GmbH, Grüner Weg 37, GER-63450 Hanau

(as per date of printing: August 9, 1993)

TIME SCHEDULE

	SUNDAY, AUGUST 15
8.30—10.00	WELCOME INAUGURATION LECTURE NEUROSCIENCES-INTRODUCTION
10.00—10.20	COFFEE BREAK
10.20—11.40	EPILEPSY
11.40—11.25	VISUAL SYSTEM
12.25—14.00	LUNCH
14.00—15.05	CLINICAL STUDIES
15.05—16.10	SOMATOSENSORY SYSTEM
16.10—18.00	POSTER SESSION ● EPILEPSY ● VISUAL SYSTEM ● CLINICAL STUDIES ● SOMATOSENSORY SYSTEM

	MONDAY, AUGUST 16
8.30—10.55	AUDITORY SYSTEM
10.55—11.15	COFFEE BREAK
11.15—12.20	MOTOR SYSTEM
12.20—14.00	LUNCH
14.00—15.35	COGNITION
15.35—16.10	SPONTANEOUS BRAIN ACTIVITY
16.10—18.00	POSTER SESSION ● AUDITORY SYSTEM ● MOTOR SYSTEM ● COGNITION ● SPONTANEOUS BRAIN ACTIVITY
20.00	COCKTAIL RECEPTION AT THE CITY HALL

	TUESDAY, AUGUST 17
8.30—10.20	MODELING-BRAIN
10.20—10.40	COFFEE BREAK
10.40—12.30	MODELING-BRAIN
12.30—14.00	LUNCH
14.00—15.45	MODELING-ROUNDTABLE
16.00—18.00	POSTER SESSION ● MODELING-BRAIN ● INSTRUMENTATION
19.00	HEURIGEN EVENING GRINZING

TIME SCHEDULE

	WEDNESDAY, AUGUST 18
8.30—10.20	INSTRUMENTATION
10.20—10.45	COFFEE BREAK
10.45—12.00	INSTRUMENTATION SPECIAL FACILITIES
	TOUR TO THE WACHAU

	THURSDAY, AUGUST 19
8.30— 9.45	HEART-BASIC ELECTROPHYSIOLOGY FUNCTIONAL LOCALIZATION
9.45—10.25	VENTRICULAR TACHYCARDIAS
10.25—10.45	COFFEE BREAK
10.45—11.55	WPW SYNDROME
11.55—13.30	LUNCH
13.30—14.25	CARDIAC RISK ANALYSIS
14.25—16.00	FETAL MAGNETOCARDIOGRAM, INVERSE SOLUTIONS, 2D CARDIAC TISSUE
16.00—18.00	POSTER SESSION ○ INVERSE SOLUTIONS ○ MODELING-HEART ● INJURY CURRENTS ● GENERAL HEASUREMENTS ○ WPW SYNDROME ○ CARDIAC RISK ANALYSIS
19.00	SUMMER NIGHT FESTIVAL

	FRIDAY, AUGUST 20
8.30— 9.05	PERIPHERAL NERVE
9.05— 9.50	GASTROENTEROLOGY
9.50—10.45	BASIC RESEARCH
10.45—11.05	COFFEE BREAK
11.05—12.20	BIOSUSCEPTOMETRY
12.20—14.00	LUNCH
14.00—15.30	POSTER SESSION ○ PERIPHERAL NERVE ○ GASTROENTEROLOGY ● BASIC RESEARCH ○ BIOSUSCEPTOMETRY

SCIENTIFIC PROGRAMME

8.30 **Welcome Address**
L. Deecke (Vienna, Austria)

8.45 1 **Inauguration Lecture**
The New Age of the EEG
H. Petsche (Vienna, Austria)

9.30 2 **Neurosciences — Introduction**
MEG in Neuroscience — State of the Art
L. Kaufman (New York, USA)

10.00 *Coffee break*

Epilepsy — Platform

Chair: S. Sato (Bethesda, USA)
H. Pockberger (Vienna, Austria)

Invited lectures

10.20 3 Modern Concepts in Basic Epileptology
H. Pockberger (Vienna, Austria)

10.45 4 Use of Multichannel MEG in Focal Epilepsies
H. Stefan, C. Hummel, S. Schneider, P. Schüler, W. Hofmann, M. Gebhardt, U. Jahnke, H. Schulemann, M. Buchfelder
(Erlangen, Germany)

Contributed papers

11.10 5 Evocation of Epileptiform Activity by Weak D. C. Magnetic Fields and Iron Biomineralization in the Human Brain
J. P. Dobson, M. Fuller, S. Moser, H. G. Wieser J. R. Dunn, J. Zoeger (Zurich, Switzerland/Santa Barbara, USA)

Contributed papers

11.20 6 Dipole Models of Temporal Lobe Spikes from Simultaneous MEG and EEG
J. Ebersole (New Haven, USA), K. C. Squires, J. Gamelin (San Diego, USA),
J. D. Lewine (New Mexico, USA), M. Scherg (Heidelberg, Germany)

11.30 7 Localization of Focal Epileptic Activity with a Simultaneous EEG and MEG Model
V. Diekmann, W. Becker, B. Grözinger, R. Jürgens, K. P. Westphal (Ulm, Germany)

Visual System — Platform

Chair: C. J. Aine (Los Alamos, USA)
A. R. Gardner-Medwin (London, U. K.)

Invited lectures

11.40 8 MEG Studies of Human Vision: Identification of Areas V1 and V2
C. J. Aine, S. Supek, D. Ranken, J. S. George, E. R. Flynn (Los Alamos, USA/
Zagreb, Croatia)

Contributed papers

12.05 9 Direct Measurement of the Slow Field Changes with Light Adaptation
A. R. Gardner-Medwin (London, U. K.), S. J. Swithenby, K. Fiaschi
(Milton Keynes, U. K.), T. Elbert, Z. Kowalik (Münster, Germany)

12.15 10 Evoked Magnetic Fields in Extrastriate Visual Cortex During Motion Detection
R. L. Rogers, L. F. H. Basile, A. C. Papanicolaou, W. T. Bourbon (Galveston, USA)

12.25 *Lunch*

Clinical Studies — Platform

Chair: H. Stefan (Erlangen, Germany)
W. Lang (Vienna, Austria)

Invited lectures

14.00 11 Magnetoencephalography with Advanced 3D MR Imaging in Pre-Surgical Planning and Intraoperative Monitoring
C. C. Gallen, R. Bucholz, D. F. Sobel, B. J. Schwartz, E. C. Hirschkoff, G. Barkley, G. Malik (La Jolla/St. Louis/San Diego/Detroit, USA),

Contributed papers

14.25 12 Magnetic Source Imaging in Cerebrovascular Diseases
K. Rieke, C. C. Gallen, D. F. Sobel, S. M. Otis, E. Bernstein, B. J. Schwartz, E. C. Hirschkoff (La Jolla/San Diego, USA)

14.35 13 Slow Wave and Beta Wave Activity Associated with White Matter Structural Brain Lesions, Localized by the Dipole Density Plot (DDP)
J. Vieth, H. Kober, P. Grummich, H. Pongratz, D. Ulbricht (Erlangen, Germany)

14.45 14 Explorations of Pathophysiological Spontaneous Activity by Magnetic Source Imaging
J. D. Lewine, W. W. Orrison, R. S. Astur, L. E. Davis, J. E. Knight, E. L. Maclin, A. Reeve (Albuquerque, USA)

14.55 15 Comparative Studies of Brain Activation with MEG and Functional MRI
J. S. George, J. A. Sanders, J. D. Lewine, A. Caprihan, C. J. Aine (Los Alamous/Albuquerque, USA)

Somatosensory System — Platform

Chair: P. M. Rossini (Rome, Italy)
C. Baumgartner (Vienna, Austria)

Invited lectures

15.05 16 Transient Plastic Modifications in Finger Somatotopy in Healthy Humans: a Neuromagnetic Study
P. M. Rossini, G. Martino, L. Narici, A. Pasquarelli, M. Peresson, V. Pizzella, F. Tecchio, G. Torrioli, G. L. Romani, (Rome/Chieti, Italy)

Contributed papers

15.30 17 Neuromagnetic Detection of Cerebral High-Frequency Oscillations (600 Hz) Superimposed on the N20-Activity from SI in Man
G. Curio, B. Mackert, M. Burghoff, R. Koetitz, D. Drung, P. Marx
(Berlin, Germany)

15.40 18 Short Latency Somatosensory Evoked Field for Tibial Nerve Stimulation: Rotation of Dipole Pattern over the Whole Head
S. Fujita, N. Nakasato, A. Matani, K. Seki, T. Yoshimoto (Osaka/Sendai, Japan)

15.50 19 Topography of Pain Related Magnetic Fields Evoked by Short Pulses of Infrared Laser Radiation
R. Laudahn, B. Bromm (Hamburg, Germany)

16.00 20 Comparison of MEG, EEG and TEG Responses to Somatosensory Stimulation in the Monkey
J. D. Lewine, J. S. George, E. R. Flynn, J. A. Sanders, R. S. Astur, C. C. Wood
(Albuquerque/Los Alamos, USA)

16.00
—18.00

Epilepsy — Poster

21 Identification of Epileptic Regions via MEG Focal Slow Wave Localizations: Comparisons with EEG Monitoring
C. C. Gallen, V. Iragi, E. Tecoma, B. J. Schwartz, F. E. Bloom, E. C. Hirschkoff
(La Jolla/San Diego, USA)

22 Non-Invasive Localization of Methohexital-Induced Epileptic Activity
C. Wienbruch, K. Lehnertz, C. E. Elger, T. Elbert, M. Hoke
(Münster/Bonn, Germany)

23 Simultaneously Recorded EEG and MEG Spikes: Comparison of Localization
D. Ko, S. Sato, K. Reese, C. Kufta (Bethesda, USA), J. Gamelin, K. Squires
(San Diego, USA)

24 Magnetoencephalographic Screening of Children and Adults: Patients with Signs and Symptoms of Epilepsy
E. Hellstrand, E. Knutsson (Stockholm, Sweden), S. Schneider, W. Striebel
(Erlangen, Germany)

25 Intraindividual Matching of MRI, PET and MEG in Periodic Lateralized Epileptiform Discharges
O. W. Witte, R. Kristeva, Y. Huang, U. Knorr, G. Schlaug, R. J. Seitz
(Düsseldorf/Münster, Germany)

26 Benign Focal Epilepsy of Childhood — A Combined Neuroelectric and Neuromagnetic Study
C. Baumgartner, A. Doppelbauer, A. Lischka, M. Graf, S. Aull,
G. Lindinger, L. Deecke, (Vienna, Austria)

16.00
—18.00

Clinical Studies — Poster

27 Magnetoencephalographic Detection of Focal Slowing Associated with Head Trauma
B. J. Schwartz, C. C. Gallen, M. Aung, D. F. Sobel, E. C. Hirschkoff, F. E. Bloom
(San Diego/La Jolla, USA)

28 DC-MEG Studies of Migraine Patients and Controls
G. L. Barkley, N. Tepley, J. E. Moran, K. M. A. Welch (Detroit/Rochester, USA)

29 Localization of Focal Spontaneous Beta Wave Activity Associated with Structural Lesion in the Brain
P. Grummich, J. Vieth, H. Kober, H. Pongratz, D. Ulbricht (Erlangen, Germany)

30 Magnetoencephalographic Evaluation of Patients with Cerebral Ischemia: Evidence of Slow Wave Activity
C. M. Kessler, A. Rosengart, H. A. Wischmann, M. Fuchs,
O. Dössel (Lübeck/Hamburg, Germany)

31 Vertex-Waves, K-Complexes and Spindles in MEG and EEG
P. Schüler, T. Brunner, H. Stefan, C. Hummel, M. Gebhardt (Erlangen, Germany)

32 MEG and EEG Topography of Frontal Midline Theta Rhythm and Source Localization
S. Uchizono, K. Iramina, S. Ueno, S. Matsuoka (Fukuoka, Japan)

33 Source Models of Sleep Spindles Using MEG and EEG Measurements
H. Yoshida, K. Iramina, S. Ueno (Fukuoka, Japan)

16.00
—18.00

Visual System — Poster

34 Whole-Head Distribution of Visual Evoked Magnetic Fields
S. P. Ahlfors, R. J. Ilmoniemi, M. J. Kajola, J. E. T. Knuutila, J. T. Simola (Espoo, Finland)

35 Localization of Multiple Current Dipolar Sources of Visually Evoked Fields in Human Parietal Cortex
O. Oshiro, S. Murakami, S. Kuriki, R. Fukatsu, N. Takahata (Amagasaki/Sapporo/Okasaki, Japan)

36 Topographical Analysis of the Visual Evoked Field: Comparison of Half Field and Paired Octant Stimuli
F. Fylan, K. D. Singh, I. Holliday, G. F. A. Harding (Birmingham, U. K.)

37 Measurements and Analysis of Evoked Magnetic and Electric Fields Associated with Visual Apparent Movement
R. Tsuda, S. Ueno (Kumamoto/Fukuoka, Japan)

38 Magnetic Recording of Cortical Oscillatory Potentials in Response to Flash Stimulation in Man
L. Lopez, A. Pasquarelli, G. L. Romani, G. Torrioli, W. G. Sannita (Chieti/Rome/Genoa, Italy/Stony Brook, USA)

16.00
—18.00

Somatosensory System — Poster

39 Chronic Pain Enhances the Magnitude of the Magnetic Field Evoked at the Site of Pain
H. Flor, Ch. Braun, N. Birbaumer, T. Elbert, B. Ross, M. Hoke (Tübingen/Münster, Germany)

40 Detailed Somatosensory Homunculus Mapping in Humans Using a Large Array Biomagnetometer
T. T. Yang, C. C. Gallen, B. J. Schwartz, F. E. Bloom (La Jolla/San Diego, USA)

41 Gustatory Evoked Electric and Magnetic Fields of the Human Brain
T. Yoshiura, S. Ueno, K. Iramina, K. Masuda (Fukuoka, Japan)

42 Magnetic Fields Evoked by Electric Finger Stimulation Above and Below the Threshold of Pain
R. T. Wakai, E. W. Howland, O. Sloot, B. Mjaanes, C. S. Cleeland (Madison, USA)

43 Short Latency Second Somatosensory Evoked Fields in the Dominant Hemisphere in Man
A. Asgari, A. I. Weir, U. Shahani, R. J. P. Bain, P. Maas, G. B. Donaldson (Glasgow, U. K.)

44 Event-Related Magnetic Fields and Neurosurgical Practice
J. D. Lewine, W. W. Orrison, E. L. Maclin, R. S. Astur (Albuquerque, USA)

SCIENTIFIC PROGRAMME

Auditory System — Platform

Chair: M. Hoke (Münster, Germany)
S. Kuriki (Sapporo, Japan)

Invited lectures

8.30 45 Localization of Auditory Cortical Sources from Multichannel-Recorded Magnetic Fields Elicited by Monosyllable Speech Sounds
S. Kuriki (Sapporo, Japan), F. Takeuchi (Okazaki, Japan)

8.55 46 Auditory Evoked Fields: Components and Their Cortical Sources
C. Pantev (Münster, Germany)

9.20 47 The Whole Head Magnetoencephalography Revealed Functional Asymmetry of Human Auditory Evoked Cortical Response
N. Nakasato, S. Fujita, I. Tamura, S. Fujiwara, T. Yoshimoto (Sendai/Osaka, Japan)

Contributed papers

9.45 48 The Configuration of Vowel-Activated Current Sources in the Human Brain
E. Diesch (Berlin, Germany), C. Eulitz, C. Pantev, S. Hampson, B. Ross, M. Hoke (Münster, Germany)

9.55 49 Localization of Current Sources Associated with Pure Tone and Vowel Stimuli
C. Eulitz, E. Diesch, C. Pantev, T. Elbert, B. Ross, S. Hampson, M. Hoke (Münster/Berlin, Germany)

10.05 50 Brain Activity During a Verb Generation Task Evaluated by PET and MEG
C. Eulitz, T. Elbert, P. Bartenstein, C. Weiller, B. Ross, S. P. Müller M. Rijntjes, C. Pantev, A. Grunewald, M. Hoke, O. Schober (Münster/Essen, Germany)

10.15 51 Measurement and Analysis of Middle Latency Auditory Evoked Magnetic Fields
T. Yoshiura, S. Ueno, K. Iramina, K. Masuda (Fukuoka, Japan), T. Kiyuna (Kawasaki, Japan)

10.25 52 Neuromagnetic Responses of Human Auditory Cortex to Phonem Pattern Perception
J. C. Engelke, R. Laudahn, T. Wiesner, M. Westhofen (Hamburg, Germany)

10.35 53 Source Estimation of the Auditory Evoked Responses During Sleep Using Magnetic Fields Measurements
K. Iramina, S. Ueno (Fukuoka, Japan)

10.45 54 Two-Source Model of the N1m Waveform, Auditory Evoked Fields
J. E. Moran, N. Tepley (Detroit/Rochester USA)

10.55 *Coffee break*

Motor System — Platform

Chair: L. Deecke (Vienna, Austria)
A. Nambu (Okazaki, Japan)

Invited papers

11.15 55 Source Models of Slow Magnetic Fields Accompanying Movement: Whole-Cortex Measurements Using Software Gradiometers
D. Cheyne, J. Vrba, T. Cheung, M. Burbank, H. Weinberg, G. Lindinger (Port Coquitlam, USA/Vienna, Austria)

Contributed papers

11.40 56 Motor Activity Source Localization Using a Large Array Biomagnetometer
D. Lawson, C. C. Gallen, B. J. Schwartz, T. A. Waltz, B. Copeland, R. Bucholz, D. F. Sobel, K. C. Squires (San Diego/La Jolla/St. Louis, USA)

11.50 57 Bilateral Activation of the Human Motor Cortex Preceding Unilateral Voluntary Finger Extension as Evidenced by Magnetic Measurements
I. Hashimoto, T. Mashiko, K. Odaka, T. Imada, T. Mizuta, K. Tomarikawa (Tokyo, Japan)

11.50 58 Magnetic Stimulation of the Primary Somatosensory and the Motor Cortical Regions During Sensory to Motor Processing in Man: Preliminary Data
H. Kaneko, M. Akamatsu (Ibaraki, Japan), T. Hasbroucq, P. Romaiguere, J. Seal (Marseille, France)

12.10 59 Organisation of the Sensorimotor Cortex as Revealed by Movement-Related Neuromagnetic Fields
R. Kristeva, B. Lütkenhöner, H. Walter, B. Ross, S. Hampson, U. Knorr, H. Steinmetz (Münster/Düsseldorf, Germany)

12.20 *Lunch*

Cognition — Platform

Chair: H. Weinberg (Vancouver, Canada)
A. Starr (Irvine, USA)

Invited papers

14.00 60 Short Term Memory and Brain Activity: Potentials and Fields
A. Starr (Irvine, USA)

Contributed papers

14.25 61 The Contingent Magnetic Variation (CMV)
T. Elbert, B. Rockstroh, S. Hampson, Ch. Pantev, M. Hoke (Münster/Konstanz, Germany)

14.35 62 Source Location for the Mismatch Field and for a New Component M2" in Tone Discrimination Tasks
B. Kofoed, C. K. Bak, K. Saermark, E. Rahn (Lyngby, Denmark/Lübeck, Germany)

14.45 63 Mismatch Fields Evoked by a Rhythm Passage
T. Imada, K. Fukuda, M. Kawakatsu, T. Mashiko, K. Odaka, M. Hayashi, K. Aihara, M. Kotani (Tokyo, Japan)

14.55 64 Task-Specific Slow Fields from Human Frontal Cortex
L. F. H. Basile, R. L. Rogers, A. C. Papanicolaou, W. T. Bourbon (Galveston, USA)

15.05 65 Testing Cognitive Models of Attention with Single-Trial Auditory Evoked Response
S. E. Robinson (Albuquerque, USA), L. Kaufman (New York, USA), G. Wilson (Dayton, USA)

15.15 66 Magnetic Event-Related Spectral Perturbations
S. Makeig (San Diego, USA), T. Elbert (Münster, Germany), C. Braun (Tübingen, Germany)

15.25 67 Mismatch Responses to Frequency Changes in Simple and Complex Sounds: Whole-Head MEG Recordings
K. Alho, M. Tervaniemi, M. Huotilainen, J. Lavikainen, H. Tiitinen, R. J. Ilmoniemi, J. E. T. Knuutila, R. Näätänen (Helsinki/Espoo, Finland)

Spontaneous Brain Activity — Platform

Chair: L. Kaufman (New York, USA)
C. C. Gallen (San Diego, USA)

Invited papers

15.35 68 Oscillatory Brain Activity at Around 40 Hz in Humans: Evidence for a Major Mechanism of Higher Brain Function?
U. Ribary, R. Llinás, F. Lado, A. Mogilner, R. Jagow, M. Joliot, J. Volkmann, A. A. Ioannides (New York, USA/Milton Keynes, U. K.)

Contributed papers

16.00 69 Alpha Process Segmentation in the Occipital Magnetoencephalogram by Self-Organizing Map
D. M. Marcishevsky, A. A. Mishin, J. Vieth, H. Kober, P. Grummich, V. L. Vvedensky (Moscow, Russia/Erlangen, Germany)

16.00
—18.00

Auditory System — Poster

70 Distributed Current and Single Current Dipole Analyses of Ipsilateral/Contralateral Auditory N1 Responses
K. D. Singh, A. A. Ioannides, N. Gray (Milton Keynes, U. K.), H. Kober, H. Pongratz, A. Daun, P. Grummich, J. Vieth (Erlangen, Germany)

71 Whole-Head Neuromagnetic Recordings of Responses to Deviant Auditory Stimuli
S. Levänen, A. Ahonen, M. Hämäläinen, R. Hari, O. V. Lounasmaa, J. P. Mäkelä, L. McEvoy, P. J. Pardo, M. Sams (Espoo, Finland)

72 Analysis of Auditory Evoked Fields Using a Distributed-Source Model
A. Grunwald, B. Lütkenhöner, E. Menninghaus, C. Pantev (Münster, Germany)

73 Sources of Auditory Evoked Fields Superimposed on 3D-MRI Reconstructions of Temporal Lobes
S. O. Tissari, M. S. Hämäläinen, R. Hari, J. P. Mäkelä (Espoo, Finland)

74 Tonotopy of the Auditory Mismatch Negativity Revealed with a 122-Channel Magnetometer
H. Tiitinen, M. Huotilainen, K. Alho, J. Lavikainen, R. J. Ilmoniemi, J. T. Simola, R. Näätänen (Helsinki, Finland)

75 Neuromagnetic Study of the Residual Inhibition Phenomenon in Tinnitus — A Case Study
R. Kristeva, B. Ross, B. Feige, H. Feldmann, M. Hoke (Münster, Germany)

76 Contingent Magnetic Variation (CMV) Studied with Stimuli Close to the Hearing Threshold in Normal Subjects and Tinnitus Patients
E. S. Proefrock, M. Hoke (Münster, Germany)

16.00
—18.00

Motor System — Poster

77 Magnetic Fields in the Cerebral Cortex Associated with Visually Initiated Finger Movements in Human Subjects
A. Nambu, R. Matsuzaki (Okazaki, Japan), H. Gemba, K. Sasaki (Kyoto, Japan)

78 Oscillatory Activity in the Motor System in Humans Derived from Neuromagnetic Recordings
R. Kristeva, B. Feige, S. Makeig, B. Ross, T. Elbert (Münster, Germany/San Diego, USA)

79 Magnetic Fields and Electric Potentials Preceding Saccadic Eye Movements and Voluntary Eye Blinks
W. Becker, V. Diekmann, B. Grözinger, J. Jordan, R. Jürgens, C. Kornhuber (Ulm, Germany)

16.00
—18.00

Cognition — Poster

80 Analysis of MEG Signals from a GO/NOGO Avoidance Paradigm and Comparison of Estimates of Brain Activity Using PET
A. A. Ioannides, K. M. Stephan, P. B. C. Fenwick, J. Lumsden, G. W. Fenton, R. Myers, G. R. Fink, R. S. J. Frackowiak (Milton Keynes/London/Crowthorne/Dundee, U. K.),

81 Estimates of Brain Activity in a GO/NOGO Paradigm: Early and Late Components, and the (no) Motor Response
P. B. C. Fenwick (London, U. K.), A. A. Ioannides (Milton Keynes, U. K.), J. Lumsden (Crowthoerne, U. K.), G. W. Fenton (Dundee, U. K.), P. Grummich, H. Kober, A. Daun, J. Vieth (Erlangen, Germany)

82 A Method for Investigation of Magnetic Fields Related to CNV
L. Hultin, P. Högstedt, A. Pasquarelli, V. Pizzella, G. L. Romani, P. M. Rossini, P. Stanzione, F. Tecchio (Gothenburg, Sweden/Rome/Chieti, Italy)

83 Prefrontal Activity on No-Go Decision
K. Sasaki, H. Gemba (Kyoto, Japan), A. Nambu, R. Matsuzaki (Okazaki, Japan)

84 Neuromagnetic Mismatch Responses of Human Auditory Cortex Evoked by Changes in Simple and Complex Sounds
J. Lavikainen, M. Huotilainen, K. Alho, H. Tiitinen, R. J. Ilmoniemi, A. Ahonen, R. Näätänen, M. S. Hämäläinen, O. Aaltonen, O. Eerola (Helsinki/Turku, Finland)

85 Spatio-Temporal Patterns Evoked by a Discrimination Task
D. Krieger (Pittsburgh, USA)

86 Mismatch Field to Tone Pairs: Neuromagnetic Evidence for Temporal Integration at Sensory Level
V. Csépe (Budapest, Hungary), Ch. Pantev, S. Hampson, M. Hoke (Münster, Germany)

87 Objective Testing of Harmonic Processing Capabilities by MEG
R. Beisteiner, A. Menze, M. Erdler, D. Huter, G. Lindinger, L. Deecke (Vienna, Austria)

16.00
—18.00

Spontaneous Brain Activity — Poster

88 Support for the Alphon Hypothesis of Human Alpha Rhythm
Z. L. Lu, J. Z. Wang, D. Karron, S. J. Williamson (New York, USA)

89 Effect of Mental Effort on Evoked and Spontaneous Fields of Cortex
S. E. Robinson, L. Kaufman, G. Wilson, J. Z. Wang (New York/Dayton, USA)

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SCIENTIFIC PROGRAMME

Modeling — Brain — Platform

Chair: B. Lütkenhöner (Münster, Germany)
S. J. Williamson (New York, USA)

Contributed papers

8.30	90	Spatial-Temporal Model of Neuronal Activity of the Human Brain Based on the MNLS Inverse J. Z. Wang, S. J. Williamson, L. Kaufman (New York, USA)
8.40	91	Estimating the Extent of Distributed Sources J. Szinger, R. Kuc (New Haven, USA)
8.50	92	Grid Spacing Criterion for Source Current Imaging R. Kuc (New Haven, USA)
9.00	93	Neuromagnetic Source Localization Using Realistic Volume Conductor Models J. Haueisen, T. Knösche, M. Kompf, H. Nowak, H. Brauer (Jena/Ilmenau, Germany)
9.10	94	Fit of the Digitized Headsurface with the Surface Reconstructed from MRI-Tomography H. Kober, P. Grummich, J. Vieth (Erlangen, Germany)
9.20	95	A Linear Iterative Algorithm for Dipole Localization C. Del Gratta (Chieti, Italy), S. N. Erńe, J. Edrich (Ulm, Germany)
9.30	96	Neural Networks for the Classification of Biomagnetic Maps M. Schlang, K. Abraham-Fuchs, R. Neuneier, J. Uebler, W. Striebel, M. Gebhardt (Munich/Erlangen, Germany)
9.40	97	Cortical Current Imaging by Morphologically Constrained Reconstructions M. Fuchs, M. Wagner, H. A. Wischmann, O. Dössel (Hamburg, Germany)
9.50	98	Estimates of Brain Activity from Unaveraged Interictal Multichannel Magnetoencephalographic Signals A. A. Ioannides (Milton Keynes, U. K.), E. Hellstrand (Stockholm, Sweden), K. Abraham-Fuchs (Erlangen, Germany)

10.00 99 Interpretation of the MEG-MUSIC Scan in Biomagnetic Source Localization
J. C. Mosher, P. S. Lewis, R. M. Leahy, M. E. Spencer (Los Alamos/
Los Angeles, USA)

10.10 100 The Use of Wiener Filter in Magnetic Imaging
E. Parente Ribeiro, P. Costa Ribeiro, J. Szczupak (Rio de Janeiro, Brasil)

10.20 *Coffee break*

Modeling — Brain — Platform

Chair: A. A. Ioannides (Milton Keynes, U. K.)
J. C. Mosher (Los Alamos, USA)

10.40 101 Electrical Source Localization Method Using Spatiotemporal Correlations between the Measured Magnetic Field
T. Obi, N. Ohyama, M. Yamaguchi, K. Sekihara, T. Honda, (Yokohama/Tokyo, Japan)

10.50 102 A Neuromagnetic Localization Using 64 Channel SQUID System and MRI
F. Masakiyo, N. Niki, H. Nishitani (Tokushima, Japan), I. Tamura (Osaka, Japan)

11.00 103 Source Localization of Two Dipoles in a Phantom Using a Whole Cortex 64 Channel SQUID Biomagnetometer System
A. Matani, Y. Yoshida, N. Nakasato, S. Fujita, I. Tamura (Osaka/Kyoto/Sendai, Japan)

11.10 104 Mesh Generation Issues in the EEG and MEG Forward Problems
L. Heller, R. Aaron, E. D. Best, H. A. Schlitt, D. M. Ranken (Los Alamos, USA)

11.20 105 Spatio-Temporal Patterns of Magnetic Fields Produced by Spreading Multiple Dipoles
K. Iramina, K. Ueno, S. Ueno (Fukuoka, Japan)

11.30 106 Source-Space Projection of Single Trials of the Auditory Evoked Field
B. Lütkenhöner, Ch. Pantev, A. Grunwald, E. Menninghaus (Münster, Germany)

11.40 107 How Silent Are Deep and Radial Sources in Neuromagnetic Measurements?
E. Menninghaus, B. Lütkenhöner (Münster, Germany)

11.50 108 Strategies for Source Space Limitation in Tomographic Inverse Procedures
J. S. George, P. S. Lewis, H. A. Schlitt, L. Kaplan, I. Gorodnitsky, C. C. Wood (Los Alamos, USA)

12.00 109 Eye-Blink Removal for Multichannel MEG Measurements
M. Huotilainen, R. J. Ilmoniemi, H. Tiitinen, J. Lavikainen, K. Alho, M. J. Kajola, J. T. Simola, R. Näätänen (Helsinki, Finland)

12.10 110 A Spatial Filtering Model for Comparison of the Forward and Inverse Problems for the Electroencephalogram and the Magnetoencephalogram
J. P. Wikswo Jr., R. S. Wijesinghe, A. Bradshaw (Nashville, USA)

12.20 111 A Physical Phantom for Simulating the Impact of Pathology on Magnetic Source Imaging
J. D. Lewine, R. S. Astur, J. Hoesing, W. W. Orrison Jr. (Albuquerque, USA)

12.30 *Lunch*

14.00
—16.00

Modeling — Round Table

Chair: S. J. Williamson (New York, USA)

112 Introduction — Basic Problems
S. J. Williamson (New York, USA)

113 Distributed Source Analysis
A. A. Ioannides (Milton Keynes, U. K.)

114 Dipole and Multidipole Source Analysis of Magnetic Fields: Possibilities and Limitations
B. Lütkenhöner (Münster, Germany)

115 Interpretation of the MUSIC Algorithm in Fitting Multiple Dipoles
J. C. Mosher (Los Alamos, USA)

116 MNLS Inverse
J. Z. Wang (New York, USA)
116a Source Analysis in the Frequency Domain
P. Valdés Sosa (Havana, Cuba)

16.00
—18.00

Modeling — Brain — Poster

117 Multi-Dipole Estimation by Selective-Minimum-Norm Method
K. Matsuura, Y. Okabe (Tokyo, Japan)

118 Choice of Source Space for Magnetic Field Tomography
M. J. Liu, A. A. Ioannides (Milton Keynes, U. K.)

119 Application to Discrimination of Multi-Sources to Somatosensory Evoked Field Using 3-Dimensional Second-Order Gradiometer
Y. Uchikawa, F. Matsumura, K. Kobayashi, M. Kotani (Tokyo, Japan)

120 MNLS Inverse Applied to Complex Source Geometries
J. Z. Wang, L. Kaufman, S. J. Williamson (New York, USA)

121 How Chaos Theory May be Applied to Evaluate Patterns of Brain Dynamics
Z. J. Kowalik, T. Elbert (Münster, Germany)

122 Combined EEG/MEG Source Estimation Methods
R. E. Greenblatt (San Diego, USA)

123 Low Dimensional Mapping of MEG Spectral Depicting Physiological Activity
J. E. Moran, N. Tepley (Detroit/Rochester, USA)

124 Automatic Detection and Localization of Focal MEG Activity
W. Mühlnickel, Ch. Wienbruch, Z. J. Kowalik, M. Hoke (Münster, Germany),
T. Elbert (Munich, Germany), C. E. Elger (Bonn, Germany)

125 Extraction of Rare Spike-Wave Complexes from Magnetic Epileptic Activity and the Source Localization
V. L. Vvedensky (Moscow, Russia), J. Vieth, H. Kober, P. Grummich (Erlangen, Germany)
P. B. C. Fenwick (London, U. K.)

126 Separation of Correlated and Uncorrelated Magnetic-Source Activities
K. Sekihara (Tokyo, Japan), B. Scholz, H. Bruder (Erlangen, Germany)

127 Wiener Estimation of Primary Current Distributions
K. Sekihara (Tokyo, Japan), B. Scholz, H. Bruder (Erlangen, Germany)

128 Current Density Imaging: a Time Series Reconstruction Implementing a "Best Fixed Distributions" Constraint
H. A. Wischmann, M. Fuchs, M. Wagner, O. Dössel (Hamburg, Germany)

129 Cortex Segmentation from 3D MR Images for MEG Reconstructions
M. Wagner, M. Fuchs, H. A. Wischmann, K. Ottenberg, O. Dössel (Hamburg, Germany)

130 Relating Function (MEG) to Structure (MRI)
P. D. Bamidis, A. A. Ioannides (Milton Keynes, U. K.)

131 Single Epoch Analysis of MEG Signals
L. C. Liu, A. A. Ioannides (Milton Keynes, U. K.)

132 Distributed Source Solutions to the MEG/EEG Inverse Problem Using Parallel Computing
J. L. Bedford (Birmingham, U. K.)

133 Hemispherical Differences in the Pattern Onset Visual Evoked Magnetic Response
C. Degg, A. Slaven, J. Bedford, R. A. Armstrong (Birmingham/Southampton, U. K.)

134 Distributed Source Analyses of the Pattern Onset Visual Evoked Magnetic Response
J. L. Bedford, C. Degg, R. A. Armstrong (Birmingham, U. K.)

135 Model Studies of the Accuracy of the Conducting Sphere Model in Magnetoencephalography Using the Spheroid
T. Fieseler, H. Nowak (Jena, Germany), A. A. Ioannides (Milton Keynes, U. K.)

136 Are Standard Head Models Superior to the Sphere Model in MEG Source Localizations?
F. Zanow, R. Verhoef, T. Knösche, M. J. Peters (Enschede, The Netherlands/ Ilmenau, Germany)

137 A Quantitative Analysis of the MEG and EEG Inverse Problems
R. Hasson, S. J. Swithenby (Milton Keynes, U. K.)

138 The Discrete Distributed Source Model
R. Hasson (Milton Keynes, U. K.)

139 Effect of Parameter Space Reduction on Dipole Localization Accuracy Exemplified for a Simple Model of a Sulcus of the Brain
B. Lütkenhöner (Münster, Germany)

140 Evaluation of MUSIC-Based Initial Source Modeling Assumptions for Spatio-Temporal Fitting of Simulated Multi-Source Neuromagnetic Data
S. Supek (Zagreb, Croatia), C. J. Aine (Los Alamos, USA)

141 On the Ambiguity in Estimating Spatial Distributions of Spread Current Sources by a Sampled Pattern Matching Method
M. Iwahashi, S. Ueno (Fukuoka, Japan)

142 Comparison between EEG and MEG in a Distributed Source Analysis of the Visual Cortex
L. Garnero, F. Gugic, J. P. Hugonin (Orsay, France), B. Renault (Paris, France)

143 An Algorithm of a Biomagnetic Source Localization
M. Primin, I. Nedayvoda, A. Gapeliuk, V. Sosnitskij, V. Kozlovskij (Kiev, Ukraine)

144 Determination of Coordinates of Magnetometric System Sensors: Using a Reference Source
M. Primin, I. Nedayvoda, A. Gapeliuk (Kiev, Ukraine), A. Matlashov (Moscow, Russia)

16.00
—18.00

Instrumentation — Poster

145 Prospects of Liquid-Nitrogen Cooled Squids in Biomagnetic Diagnostics
A. I. Braginski, T. Elbert, Y. Tavrin, C. Pantev, Y. Zhang M. Hoke (Jülich/Münster, Germany)

146 Biocardiography without SQUIDs
R. Rempt, J. F. Moore (Lincolnshire, USA)

147 Superconducting Shield Enclosing a Human Body for Biomagnetism Measurement
H. Matsuba, K. Shintomi, A. Yahara, D. Irisawa, K. Imai (Yokohama, Japan), H. Yoshida, S. Seike (Nagoya, Japan)

148 Development of Prefabricated Magnetically Shielded Room Including a Universal Gantry System in Tokyo Denki University
K. Yamazaki, T. Abe (Tokyo, Japan), Y. Uchikawa, M. Kotani (Saitama, Japan)

149 Evaluation of Magnetically Shielded Room for Biomagnetic Measurement
K. Yamazaki, T. Abe (Tokyo, Japan), K. Iramina, S. Ueno (Fukuoka, Japan),
K. Chinone (Chiba, Japan)

150 8-Channel Tangential Biomagnetometer: System Design and Construction
A. P. Grebenkin, K. A. Klevtzov, S. Yu. Shabanov, S. P. Naurzakov,
K. G. Gurtovoy, V. I. Ozhogin, V. L. Vvedensky (Moscow, Russia)

151 A Multichannel Tangential-Field Gradiometer System
O. Josephs, K. Fiaschi, K. D. Singh, S. J. Swithenby (Milton Keynes/
Birmingham, U. K.)

152 Biomagnetic Multichannel System Built with 19 Cryogenic Probes
A. Matlashov, V. Slobodchikov, A. Bakharev, Yu. Zhuravlev, N. Bondarenko
(Moscow, Russia)

153 A Novel Approach to Extended Coverage Biomagnetometers
D. S. Buchanan, L. Warden, R. T. Johnson, S. W. Riley (San Diego, USA)

154 Testing Biomagnetic Planar Gradiometers Using High Resolution SQUID
Magnetometry
K. D. Singh (Birmingham, U. K.), I. M. Thomas (Nashville, USA)

SCIENTIFIC PROGRAMME

Instrumentation — Platform

Chair: H. Kado (Chiba, Japan)
T. Katila (Helsinki, Finland)

Contributed papers

8.30 155 Hybrid Squid Probes Using 2- and 3-Dimensional Thin Film Pick-up Coils for Multichannel Biomagnetic System
K. Tsukada, T. Morooka, J. Kawai, N. Matsuda, N. Mizutani, S. Yamasaki, G. Uehara, H. Kado, (Chiba, Japan)

8.40 156 New Results in Active Noise Compensation for Magnetically Shielded Rooms
R. Huonker (Jena, Germany), H. J. M. Ter Brake, H. Rogalla (Enschede, The Netherlands)

8.50 157 Doorless and Economic Shield for Clinical Magnetoencephalography
J. Edrich, P. Teale, M. R. Reite, J. E. Zimmerman (Ulm, Germany/Denver, USA)

9.00 158 Design and Fabrication of Direct-Feedback Gradiometer
K. Yokosawa (Tokyo, Japan), S. Kuriki (Sapporo, Japan)

9.10 159 Simple Test Procedures for Multichannel SQUID Systems
O. Dössel, B. David, M. Fuchs, J. Krüger, H. A. Wischmann (Hamburg, Germany)

9.20 160 Comparing Instrumental MEG Resolving Power by a Chi-Squared Approach
E. R. Flynn (Los Alamos, USA)

9.30 161 Whole Cortex 64 Channel System for Shielded and Unshielded Environments
J. Vrba, K. Betts, M. Burbank, T. Cheung, D. Cheyne, A. A. Fife, G. Haid, P. R. Kubik, S. Lee, J. McCubbin, J. McKay, D. McKenzie, K. Mori, P. Spear, B. Taylor, M. Tillotson, G. Xu (Port Coquitlam, Canada)

9.40 162 A Miniature Single-Channel DC SQUID Magnetometer for Clinical Use
A. Matlashov, Y. Zhuravlev, V. Slobodchikov, N. Bondarenko, A. Bakharev (Moscow, Russia), D. Rassi (Swansea, U. K.)

9.50 163 A Trial to Detect the Evoked Magnetic Field with a Small Magnet on the Subject
M. Higuchi, T. Yoshida, T. Ito, Y. Haruta, H. Kado (Chiba, Japan)

10.00 164 Noise Reduction Methods of Exotic Magnetic Noise Source
M. Shimogawara, H. Kado (Chiba, Japan)

10.20 *Coffee break*

Instrumentation — Special Facilities — Platform

Chair: S. N. Erné (Ulm, Germany)
G. L. Romani (Chieti, Italy)

10.45 165 BIRCH — European Large Scale Facility on Biomagnetism
T. Katila (Helsinki, Finland)

11.10 166 The National Project of Superconducting Sensor Laboratory in Japan
H. Kado (Chiba, Japan)

11.35 167 The Italian Biomagnetic Facilities
V. Pizzella (Rome, Italy)

12.00 *Lunch*

SCIENTIFIC PROGRAMME

Heart — Basic Electrophysiology Functional Localization — Platform

Chair: Y. Nakaya (Tokushima, Japan)
G. Stroink (Halifax, Canada)

Invited Lectures

8.30 168 The Role of MCG in Cardiology — Introduction
P. Weismüller (Ulm, Germany)

8.55 169 Fundamentals of Cardiac Arrhythmias
M. Nomura (Tokushima, Japan)

9.20 170 Functional Localization in Cardiology with MCG
W. Moshage (Erlangen, Germany)

Ventricular Tachycardias — Platform

Chair: J. Montonen (Helsinki, Finland)
K. Brockmeier (Berlin, Germany)

Contributed papers

9.45 171 Successful Catheter Ablation of Human Incessant Ventricular Tachycardia Guided by Noninvasive Biomagnetic Mapping
A. Schirdewan, T. Beier, M. Burghoff, J. Brachmann, R. Dietz (Berlin/Heidelberg, Germany)

9.55 172 Parameters of Early Dipole Localization in MCG Investigation of Premature Ventricular Complexes
S. Achenbach, W. Moshage, B. Seese, R. Killmann, K. Bachmann (Erlangen, Germany)

10.05 173 Detection of Reentry Currents in Atrial Flutter by Magnetocardiography in Man
P. Costa Ribeiro, E. Parente Ribeiro, E. Andrade Lima, A. C. Bruno,
E. Costa Monteiro, S. Thiesen (Rio de Janeiro, Brasil)

10.15 174 Localization of the Site of Origin of Ventricular Late Fields in the Signal Averaged Magnetocardiogram in Patients with Ventricular Late Potentials
P. Weismüller, K. Abraham-Fuchs, R. Killmann, P. Richter, W. Härer, M. Höher, M. Kochs, Th. Eggeling, V. Hombach (Ulm/Erlangen, Germany)

10.25 *Coffee break*

WPW — Syndrome — Platform

Chair: P. Weismüller (Ulm, Germany)
J. Nenonen (Espoo, Finland)

Contributed papers

10.45 175 Comparative Studies of Magnetocardiographic and Electrocardiographic Mappings for the Localization of Accessory Pathway in WPW Syndrome
Y. Nakaya, M. Nomura, K. Saito, F. Kishi, H. Miyoshi, A. Nishikado, S. Bando, H. Nishitani (Tokushima, Japan)

10.55 176 Magnetocardiographic Guiding for Catheter Ablation of Accessory Pathways
M. Oeff, M. Burghoff, L. Hennig, M. Jereczek, M. Dulce, H. Hahlbohm, K. J. Wolf, R. Schröder (Berlin, Germany)

11.05 177 Magnetocardiographic Source Localization of Accessory Pathway: Comparison with Electrophysiological Study
T. Kokubun, N. Awano, K. Kido, M. Ono, Y. Maruyama (Fukushima, Japan), R. Horiuchi, N. Kasai (Tsukuba, Japan)

11.15 178 First Body Surface Potential and Magnetic Fields Maps of Wolff-Parkinson-White Syndrome Patients
R. Lamothe, G. Stroink, M. J. Gardner (Halifax, Canada)

11.25 179 Magnetocardiographic Analysis of Overt and Concealed Accessory Pathway Conduction before and after Ajmaline-Induced Block
M. Oeff, L. Hennig, M. Jereczek, R. Agrawal, M. Burghoff, R. Zimmermann, R. Schröder (Berlin, Germany)

11.35 180 Comparison of the Diagnostic Performance of Magnetocardiography and Electrocardiography in Anteroseptal and Inferior Infarctions
O. S. Oja, J. Nousiainen, J. Malmivuo, A. Uusitalo (Tampere, Finland)

11.45 181 Ablation of Idiopathic Ventricular Tachycardia and Accessory Conduction Pathways Guided by Multichannel MCG
W. Moshage, K. Göhl, S. Achenbach, B. Seese, S. Schneider, K. Bachmann (Erlangen, Germany)

11.55 *Lunch*

Cardiac Risk Analysis — Platform

Chair: P. Costa Ribeiro (Rio de Janeiro, Brasil)
W. Moshage (Erlangen, Germany)

Invited Lectures

13.30 182 MCG in the Identification of Patients Prone to Malignant Arrhythmias
J. Montonen (Espoo, Finland)

Contributed papers

13.55 183 Role of Magnetocardiography in Sudden Cardiac Death Risk Evaluation: Significance of RS Score in a Normal Population
S. Comani, B. Merlino, K. Brockmeier, S. Di Luzio, S. N. Erné, A. Mezzetti, G. L. Romani (Chieti, Italy/Berlin/Ulm, Germany)

14.05 184 Magnetocardiographic Repolarization Maps in Children with Long QT Syndrome
L. Rovamo, M. Paavola, J. Montonen, M. Mäkijärvi, J. Nenonen, T. Katila (Helsinki/Espoo, Finland)

14.15 185 Investigation of Magnetocardiographic Parameters for the Detection of Graft Rejection after Heart Transplantation
S. Achenbach, W. Moshage, S. Fürst, R. Killmann, H. Mundl, B. Permanetter, K. Bachmann (Erlangen/Munich, Germany)

Inverse Solutions, 2D Cardiac Tissue, Fetal Magnetocardiogram — Platform

Chair: S. N. Erné (Ulm, Germany)
T. Katila (Helsinki, Finland)

Invited Lectures

14.25 186 Localization of Epicardial Sources Using Magnetic and Potential Maps
A. S. Ferguson (Halifax, Canada)

14.50 187 Magnetic Imaging of Two-Dimensional Cardiac Tissue
D. J. Staton (Nashville, USA)

Contributed papers

15.15 188 Fetal Heart Rate Monitoring and Waveform Mapping of the Fetal Magnetocardiogram
M. Wang, R. T. Wakai, J. Henry, E. Forbes, C. B. Martin (Madison, USA)

15.25 189 Fetal Magnetocardiography in a Clinical Setting
A. I. Weir, A. Quin, A. Asgari, R. Bain, P. Maas, G. B. Donaldson, U. Shahani (Glasgow, U. K.)

15.35 190 Clinical Assessment of Fetal Magnetocardiography
Y. E. Zhuravlev (Moscow, Russia), D. Rassi, S. J. Emery (Swansea, U. K.)

15.45 191 Development of the Fetal Magnetocardiograms from the 13th Week of Gestation Onward
Z. Dunajski, M. J. Peters (Enschede, The Netherlands)

16.00
—18.00

Inverse Solutions — Poster

192 Atrial Excitation onto the MRI Using Magnetocardiogram
M. Nomura, Y. Nakaya, K. Saito, F. Kishi, H. Miyoshi, S. Ito, M. Wada, S. Fujita, T. Takae, I. Tamura (Tokushima/Osaka, Japan)

193 Study on the Excitation Process During Ventricular Depolarization in Normal Subjects by Magnetocardiogram
K. Saito, Y. Nakaya, M. Nomura, N. Takeuchi, K. Muguruma, F. Kishi, H. Miyoshi, H. Nishitani (Tokushima, Japan)

194 Calculation of Distributed Electrical Current Densities on a Three-Dimensional Surface within the Ventricular Myocardium and Septum from the Magnetocardiogram — a Computer Model Study
B. Tilg, P. Wach, M. Renhardt, P. Fleischmann (Graz, Austria)

195 Magnetocardiographic Localization Algorithms Using Realistic Multicompartment Torso Models
H. Brauer, T. Knösche, A. Feeser (Ilmenau, Germany)

196 Echocardiography as Topographical Reference Method in Magnetocardiography
W. Moshage, S. Achenbach, R. Killmann, K. Göhl, B. Seese, K. Bachmann (Erlangen, Germany)

197 The Relationship between Size of Cardiac Excitation Wavefront, Magnetic Field and Dipole Strength in MCG Measurements
R. Killmann, P. Weismüller, S. Achenbach (Erlangen/Ulm, Germany)

198 Localization Accuracy in a Chest-Shaped Phantom
R. Segovia, D. Kynor, L. Warden (San Diego, USA)

199 Magnetocardiographic Localization of Cardiac Source in an Unshielded Environment with an 11-Channel Magnetometer: A Preliminary Study in Normal Subjects
B. Merlino, S. Della Penna, S. Di Luzio, A. Carriero, C. Del Gratta, S. Comani, G. L. Romani (Chieti, Italy)

200 Cardiogenerator Observability from Measured Electric and Magnetic Fields
P. Kneppo (Bratislava, (Slovakia), L. I. Titomir, (Moscow, Russia)

201 Approximation of Torso Geometries by Surface Harmonic Expansion
R. Hren, D. Vardy, R. Miller, S. Ferguson, G. Stroink (Halifax, Canada)

202 Elliptic Cylinder as a Model of the Human Torso
V. Jazbinsek, Z. Trontelj (Ljubljana, Slovenia)

203 Magnetic Inverse Method for Determination of Anisotropic Electrical Conductivities in a Two-Dimensional Cardiac Bidomain
D. J. Staton, J. P. Wikswo Jr. (Nashville, USA)

204 A Regularized Minimum Norm Method for Calculating Distributions of Source Currents on Epicardial Surfaces
A. S. Ferguson, D. Vardy, R. Hren, G. Stroink (Halifax, Canada)

205 The Effect of Conductivity Inhomogeneities on the Body-Surface Potential and Magnetic-Field Inverse Solutions
R. Hren, X. Zhang, G. Stroink (Halifax, Canada)

16.00
—18.00

Modeling — Heart — Poster

206 Influence of Contraction Caused Changes in the Cardiac Fiber Direction on the Magnetocardiogram — a Computer Simulation Study
M. Renhardt, P. Wach, W. Moshage, F. Dienstl, R. Killmann, B. Tilg, P. Fleischmann (Graz, Austria/Erlangen, Germany/Innsbruck, Austria)

207 Spatio-Temporal Mapping of Cardiac Magnetic Fields from Multiple Dipoles in a Realistic Nonhomogenous Finite Element Model of Heart and Torso
C. Ramon, P. Czapski, L. L. Huntsman, G. H. Bardy, D. Blilie, Y. Kim (Seattle, USA)

208 Biomagnetic Functional Localization of Electrical Sources in the Human Heart with Different Volume Conductor Models
H. Bruder, R. Killmann, W. Moshage, P. Weismüller, S. Achenbach, F. Bömmel (Erlangen/Ulm, Germany)

16.00
—18.00

Injury Currents — Poster

209 Magnetocardiographic (MCG) Analysis of Myocardial Injury Currents
W. Moshage, B. Seese, S. Achenbach, R. Killmann, K. Bachmann (Erlangen, Germany)

210 ST Segment Changes in a Healthy Subject During Pharmacological Stress Test Using Magnetocardiographic and Electrocardiographic Multichannel Recordings
K. Brockmeier, M. Burghoff, H. Koch, L. Schmitz, R. Zimmermann (Berlin, Germany)

211 Magnetic Detection of Cardiac Injury Currents Due to Coronary Artery Occlusion in Isolated Rabbit Hearts
E. Costa Monteiro, S. Della Penna, L. Di Donato, S. Di Luzio, A. Pasquarelli, S. N. Erné, G. L. Romani (Chieti/Rome, Italy/Ulm, Germany)

16.00
—18.00

General Measurements — Poster

212 Recording of MCG with a Symmetric Unipositional ABC-Vectorgradiometer
A. Rissanen, A. Siltanen, J. Nousianen, J. Malmivuo (Tampere, Finland)

213 Magnetocardiography in Patients with Chagas Disease
R. M. M. Verzola, O. Baffa, R. T. Wakai, P. L. Sousa (Ribeirao Preto/Sao Carlos, Brazil)

214 High-Resolution Imaging of Magnetic Fields from Injected and Action Currents in Slices of Anisotropic Cardiac Tissue
D. J. Staton, J. P. Wikswo Jr. (Nashville, USA)

16.00
—18.00

WPW Syndrome — Poster

215 Localization of Ventricular Pre-Excitation in a Two-Years-Old Child by Multichannel Magnetocardiography
J. Nenonen, L. Rovamo, L. Toivonen, M. Leiniö, J. Montonen, M. Paavola, S. Ahlfors, R. J. Ilmoniemi, A. Järvinen, L. Nisula, P. Hekali T. Katila (Espoo/Helsinki, Finland)

216 Biomagnetic Accessory Pathway Localization Prior to Catheter Ablation
A. Schirdewan, R. Fischer, R. Engelhard, W. Duckeck, K. H. Kuck (Berlin/Hamburg, Germany)

16.00
—18.00

Ventricular Tachycardia — Poster

217 Localization of the Focus in Ventricular Tachycardia by Magnetocardiogram
M. Nomura, Y. Nakaya, K. Saito, F. Kishi, H. Miyoshi, S. Ito, M. Wada, S. Fujita, T. Takae, I. Tamura (Tokushima/Osaka, Japan)

218 Multichannel Magnetocardiography for Single Beat Analysis of Polymorphic Ventricular Tachycardia
W. Moshage, S. Achenbach, K. Göhl, S. Schneider, K. Bachmann (Erlangen, Germany)

16.00
—18.00

Cardiac Risk Analysis — Poster

219 Comparison of Time Domain and Spectrotemporal Domain Analysis of High Resolution Magneto- and Electrocardiographic Recordings of Myocardial Infarction Patients with and without Ventricular Tachycardia
J. Montonen, M. Mäkijärvi, M. Paavola, M. Leiniö, P. Siltanen, T. Katila
(Espoo/Helsinki, Finland)

SCIENTIFIC PROGRAMME

Peripheral Nerve — Platform

Chair: G. Curio (Berlin, Germany)
J. M. Van Egeraat (Rotterdam, The Netherlands)

Invited Lectures

8.30 220 Neuromagnetic Recordings of Evoked and Injury-Related Activity in the Peripheral Nervous System
G. Curio (Berlin, Germany)

Contributed papers

8.55 221 Use of Compound Action Current Recordings for Evaluation of Peripheral Neural Stimulation
E. V. Goodall, L. M. Kosterman (Enschede, The Netherlands), J. M. Van Egeraat (Rotterdam, The Netherlands)

Gastroenterology — Platform

Chair: W. O. Richards (Nashville USA)
O. Baffa (Ribeirao Preto, Brazil)

Invited Lecture

9.05 222 The Gastrointestinal System: Physiology, Pathology and Possibilities for Biomagnetic Diagnosis
W. O. Richards (Nashville, USA)

Contributed papers

9.30 223 Measurements of Gastrointestinal Transit Using Fluxgate Magnetometers
M. Forsman, L. Hultin, H. Abrahamsson (Gothenburg, Sweden)

9.40 224 Non-Invasive Measurement of Human Gastric and Small Bowel Electrical Activity
J. Golzarian, D. J. Staton, J. P. Wikswo, R. N. Friedman, W. O. Richards (Nashville, USA)

Basic Research — Platform

Chair: Y. Okada (Albuquerque, USA)
G. L. Barkley (Detroit, USA)

Invited Lecture

9.50 225 Characteristics of Magnetic Signals from the Hippocampus of the Guinea Pig
S. Kyuhou (Okazaki, Japan), Y. C. Okada, C. Xu (Albuquerque, USA)

Contributed papers

10.15 226 Preliminary Observations of Neuromagnetic Fields Recorded by DC-MEG During Irreversible Anoxia
G. L. Barkley, N. Tepley (Detroit, USA), Y. C. Okada (Albuquerque, USA)

10.25 227 Magnetocorticography
Y. C. Okada, C. Xu (Albuquerque, USA)

10.35 228 Magnetically Detected Intracellular Current in Single Cell of the Green Algae Chara Corallina
V. Jazbinsek, Z. Trontelj, R. Zorek, S. N. Erné, J. Luznik, J. Pirnat, Z. Jaglicic (Ljubljana, Slovenia/Berlin, Germany)

10.45 *Coffee break*

Biosusceptometry — Platform

Chair: D. Rassi (Swansea, U. K.)
W. Möller (Frankfurt, Germany)

Invited Lecture

11.05 229 A Model of Phagosome Motion and its Application to Cytomagnetometry with Monodispersed Particles
I. Nemoto, N. Imano, S. Imamura (Saitama, Japan)

Contributed papers

11.30 230 Assessment of Low Iron Stores in Long-Distance Runners by Liver Biosusceptometry
D. Schwarz, P. Nielsen, R. Fischer, R. Engelhardt, E. E. Gabbe (Hamburg, Germany)

11.40 231 Cytomagnetometry with J774-Macrophage Cells — Influence of Particle Size and Dispersity on Relaxation
W. Möller, V. Guzijan, W. Stahlhofen (Frankfurt, Germany)

11.50 232 Magnetopneumographic Investigation of Asbestos-Related Disease
D. Rassi, J. Fardy, P. Ebden (Swansea, U. K.)

12.00 233 Superparamagnetic Iron Oxide Particles Studied by a Biomagnetic Instrumentation
M. A. Macri, C. Del Gratta, L. Di Donato, S. Di Luzio, A. Pasquarelli, G. L. Romani (Chieti/Rome, Italy)

12.10 234 Three-Dimensional Biomagnetic Imaging with Magnetic Susceptibility Tomography
J. P. Wikswo Jr., N. G. Sepulveda, I. M. Thomas (Nashville, USA)

12.20 *Lunch*

14.00
—15.30

Peripheral Nerve — Poster

235 Electric Potential and Magnetic Field of Curved Peripheral Nerves
W. Haberkorn, M. Burghoff (Berlin, Germany)

236 Neuromagnetic Correlates of Evoked Somatosensory Activity Travelling through the Lumbosacral Cauda Equina and Thoracic Spinal Cord in Man
G. Curio, B. Mackert, M. Burghoff, R. Koetitz, D. Drung, P. Marx (Berlin, Germany)

237 The High Variability of Nerve Injury Field Patterns Can be Simulated by Minimal Alterations of Source Parameters in a Realistic Double Dipole Configuration
M. Burghoff, G. Curio (Berlin, Germany)

14.00
—15.30

Gastroenterology — Poster

238 Magnetic Markers for Gastroenterology
L. Trahms, R. Kötitz, W. Weitschies (Berlin, Germany)

239 Measurements of Small Bowel Basic Electrical Rhythm (BER) In Vivo Using a High Resolution Magnetometer
D. J. Staton, J. Golzarian, J. P. Wikswo Jr., R. N. Friedman, W. O. Richards (Nashville, USA)

240 Mixing Power of Food in the Stomach Evaluated by a Biomagnetic Technique
O. Baffa, R. B. Oliveira, J. R. A. Miranda, P. L. Sousa (Ribeirao Preto, Brazil)

14.00
—15.30

Basic Research

241 Source Localization by Acoustic Evoked Responses and Impulse Noise Effects Investigations in Awake Animals
E. Emmerich, F. Richter, H. Nowak (Jena, Germany)

242 Characteristics of the Magnetic Evoked Field Associated with Neuronal Activities in Longitudinal Slices of the Guinea Pig
Y. C. Okada, S. Kyuhou (Albuquerque, USA/Okasaki, Japan)

14.00
—15.30

Biosusceptometry — Poster

243 Ferrofluid Relaxation for Biomagnetic Imaging
R. Kötitz, L. Trahms, H. Koch, W. Weitschies (Berlin, Germany)

244 Biomagnetic Susceptibility Measurements of Liver and Spleen in Thalassemic Children
R. Engelhardt, C. Tiemann, G. E. Janka, P. Nielsen, E. E. Gabbe, R. Fischer (Hamburg, Germany)

245 Total Lung Dust Inverse Solutions in Single Plane SQUID Magnetopneumography
M. Forsman, P. Högstedt (Gothenburg, Sweden)

246 Use of High-Field Magnets Together with a Sensitive SQUID-Sensor within a Magnetically Shielded Room
W. Möller, W. Stahlhofen (Frankfurt, Germany)

247 Magnetic Microparticles Can Measure Intracellular Viscoelasticity In Vivo
J. Wiegand, W. Möller, I. Nemoto, W. Stahlhofen (Frankfurt, Germany/Saitama, Japan)

248 Pulsing Electromagnetic Field Effect on the Cerebral Function of Laboratory Animals
A. Doeva, U. Tuaev, U. Chetagurova, Z. Kargieva (Vladikaukaz, Russia)

249 The Biological Effects of Magnetic Fields on Laboratory Animals
A. Kalabecov, A. Doeva, U. Chetagurova (Vladikaukaz, Russia)

250 Cerebral Application of Electromagnetic Fields
Z. Kargieva, A. Chetagurova, A. Doeva, A. Zaoev (Vladikaukaz, Russia)

251 Study of Macrophage Activity in Rat Liver Using Intravenous Superparamagnetic Tracers
I. M. Thomas, R. N. Friedman (Nashville, USA)

252 Investigation of Biomagnetic Field Using Two-Dimensional Model of Secondary Sources
S. Romanovich, V. Sosnitskij, I. Vojtovich (Kiev, Ukraine)

15.30 *Coffee break*

15.50 Farewell Address and
Invitation to the 10th International Conference on Biomagnetism
L. Deecke (Vienna, Austria),
C. C. Wood (Los Alamos, USA)

SOCIAL PROGRAMME — TIME-TABLE

Day	A.M.	P.M.	Evening
Saturday August 14			18.00 Welcome Cocktail Courtyard University of Vienna invitation
Sunday August 15	Historical Vienna City Tour 340,—	Art Nouveau in Vienna 380,—	
Monday August 16	Medical Vienna 320,—	Viennese Coffeehouses 240,—	20.00 Cocktail Reception at the City Hall of Vienna invitation
Tuesday August 17	Museum of Fine Art 130,—		Heurigen evening Grinzing 450,—
Wednesday August 18	Half-day excursion to the Wachau	830,—	
Thursday August 19	Heiligenkreuz Mayerling 360,—		Summer Night Festival 150,—
Friday August 20	Klosterneuburg Kahlenberg Wiener Wald 290,—	Citywalk 210,—	

Minimum number of participants: 25 persons, all prices are quoted in Austrian Schillings per person and include guide, entrance fees and bus if necessary.

Meeting point and departure for all tours is in front of the University of Vienna.

SOCIAL EVENTS

Saturday, August 14, 1993

18.00 hrs Welcome Cocktail with music in the courtyard of the ancient University of Vienna at the invitation of the Local Organizing Committee

Monday, August 16, 1993

20.00 hrs Cocktail reception at the City Hall on invitation of the Mayor of the City of Vienna

Tuesday, August 17, 1993

optional Heurigen evening in Grinzing — see also page 53

Wednesday, August 18, 1993

optional Half-day excursion to the Wachau — see also page 53

Thursday, August 19, 1993

optional
19.00 hrs Summer Night Festival with dance at the premises of the old Vienna General Hospital (University Clinics). The foundation stone for the building was laid in 1693 (exactly 300 years ago) under the Emperor Leopold I. It was then thought to function as a special building for the poor. 91 years later under the reign of Emperor Joseph II the General Hospital was established in this building. The Summer Night Festival will be held in the open air, in the charming first courtyard of the Hospital, which is a real oasis within the centre of Vienna. — see also page 53

City tour "Historical Vienna"

This tour will take you along the Ringstrasse with its magnificent buildings such as the State Opera, the National Museums, the Parliament, the City Hall, the Burgtheatre, the University and the monuments of famous composers, poets and artists. Highlight of the tour is a visit to the Imperial Apartments of Schönbrunn Castle. On the way back a glimpse at Belvedere Castle.

Departure: 9.00 a.m., duration app. 3.5 hours.

Art Nouveau in Vienna

On this tour you will become acquainted with some of the most important and best-known buildings of the "Art Nouveau Era" in Vienna, as well as some of its great architects, e.g. Otto Wagner. Highlight of the tour is a visit to the "Kirche am Steinhof" which has been fully restored recently.

Departure: 14.00 p.m., duration app. 3.5 hours, price includes also the visit of the Beethovenfries in the Secession.

Medical Vienna

The institution "Josephinum" (Museum of Medical History) was founded by Emperor Joseph II. Owing to the importance attributed to it, it now holds a unique collection of anatomical wax models from the school of Felice Fontana. Another well known address — Berggasse 19 — will be the next stop. Many patients took to the couch here. Professor Freud analysed their minds in order to heal their illnesses. Freud's psychoanalysis became world famous.

Departure: 9.00 a.m., duration app. 3 hours

Viennese Coffeehouses

This tour starts at the Café Central, haunt of Vienna's turn-of-the-century intellegentsia, introduces you to the Hawelka and ends to sample Vienna's most famous cake, the "Sacher Torte".

Meeting time: 14.00 p.m., duration app. 2.5 hours

Museum of Fine Arts

Vienna's most notable museum holds paintings, pieces from antiquity and ancient Egypt, and much more besides. The emperors in Vienna liked to surround themselves with fine art. A hundred years ago a magnificent museum, a work itself, was built for their treasures.

Meeting point: 9.30 a.m., duration app. 2.5 hours

Heurigen Evening Grinzing

Grinzing is certainly Austria's best known wine-growing district. In recent years the village has enjoyed increasing popularity not only due to the quality of the Grinzing wine and its snug wine taverns. Enjoy a lovely evening with music, rustic dinner and wine.

Departure: 18.30 p.m. (price includes the meal, 2 glasses of wine and 1 mineral water)

Excursion to the Wachau Valley

This trip takes you to Melk, where you visit the baroque Benediktiner Abbey with its famous library and painted ceiling. After lunch at the "Stiftstaverne" a ship takes you along the Danube Valley to Dürnstein, where a city stroll of this picturesque little town with its narrow streets and well known castle, where Richard the Lionhearted was imprisoned, will round up the excursion.

Departure: 12.00 a.m., duration app. 6 hours (price includes also the boat trip and lunch)

Vienna Woods, Heiligenkreuz, Mayerling

A half day excursion which will show you the most beautiful sights surrounding Vienna, the pleasant scenery of the Vienna Woods. Passing the old Roman City of Baden, famous for its thermal springs, we will take you to the romantic Helenental and the former hunting lodge of the Habsburg family at Mayerling. A commemorative chapel has been built where Crown Prince Rudolph, the only son of Emperor Franz Joseph, is said to have committed suicide with Baroness Vetsera in 1889. In the Cistercian Abbey of Heiligenkreuz you will visit the Gothic cloister. Driving by the "Höldrichsmühle", where Franz Schubert composed his song "Under the Lindentree", you leave the Vienna Woods and return to Vienna, passing by Liechtenstein Castle.

Departure: 9.00 a.m., duration app. 3.5 hours

Summer Night Festival

Summer Night Festival with dance at the premises of the old Vienna General Hospital (University Clinics). The foundation stone for the building was laid in 1693 (exactly 300 years ago) under the Emperor Leopold I. It was then thought to function as a special building for the poor. 91 years later under the reign of Emperor Joseph II the General Hospital was established in this building. The Summer Night Festival will be held in the open air, in the charming first courtyard of the Hospital, which is a real oasis within the centre of Vienna. — see also page ...

Price per person: ATS 150,—, Dress: Evening dress

Panorama Tour – Klosterneuburg

From the top of the hill Kahlenberg in the Vienna Woods, you can overlook Vienna, the Danube and the romantic little villages of Nussdorf and Grinzing. Arrive at Klosterneuburg and visit the Augustinian Abbey with the world-famous "Verduner Altar" by Nikolaus von Verdun, 1181. Before returning to Vienna stop for coffee and cake.

Departure: 9.00 a.m., duration 3 hours, price includes also coffee and cake.

City Walk

Each house of this old quarter carries its own story, each court shows its special character. Stroll along quiet streets, away from the well known routes.

Meeting point: 14.00 p.m., duration app. 2.5 hours.

City Walk – Art Nouveau-Glass and Furniture

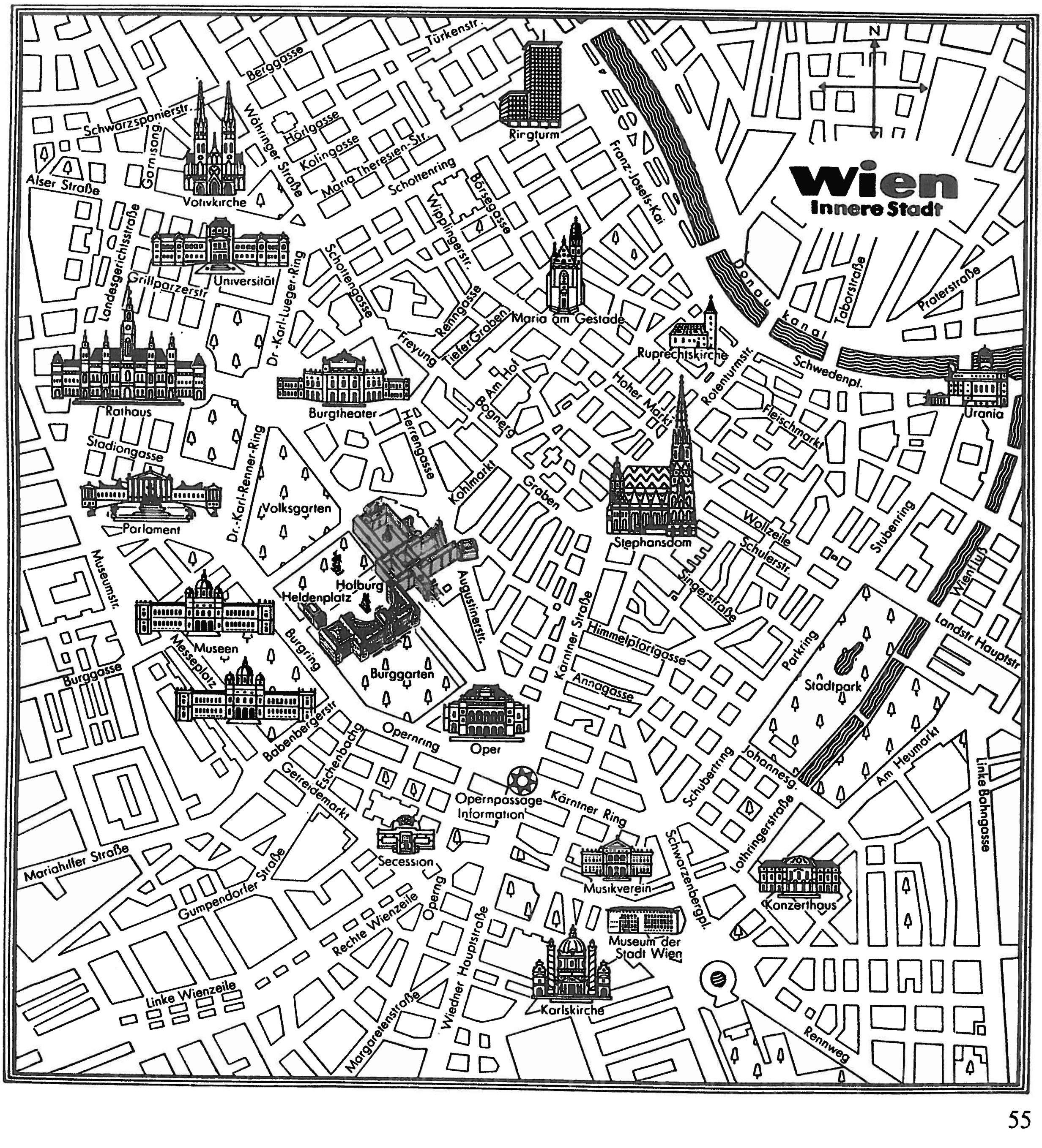
Explore the glittering world of historic glassware exhibited in the famous Lobmeyr Glass Museum as well as the world of textiles and furniture from the turn of the century at Backhausen's and Thonet's.

Meeting point: 9.00 a.m., duration app. 2.5 hours.

City Walk with Mozart and Musik – Highlights

Get to know the Vienna at the time of Wolfgang Amadeus Mozart and let yourself be carried back into bygone days by flute and guitar music played on tour by two graduates of the Vienna Music Academy.

Meeting point: 14.00 p.m., price includes also music.


Wien
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N
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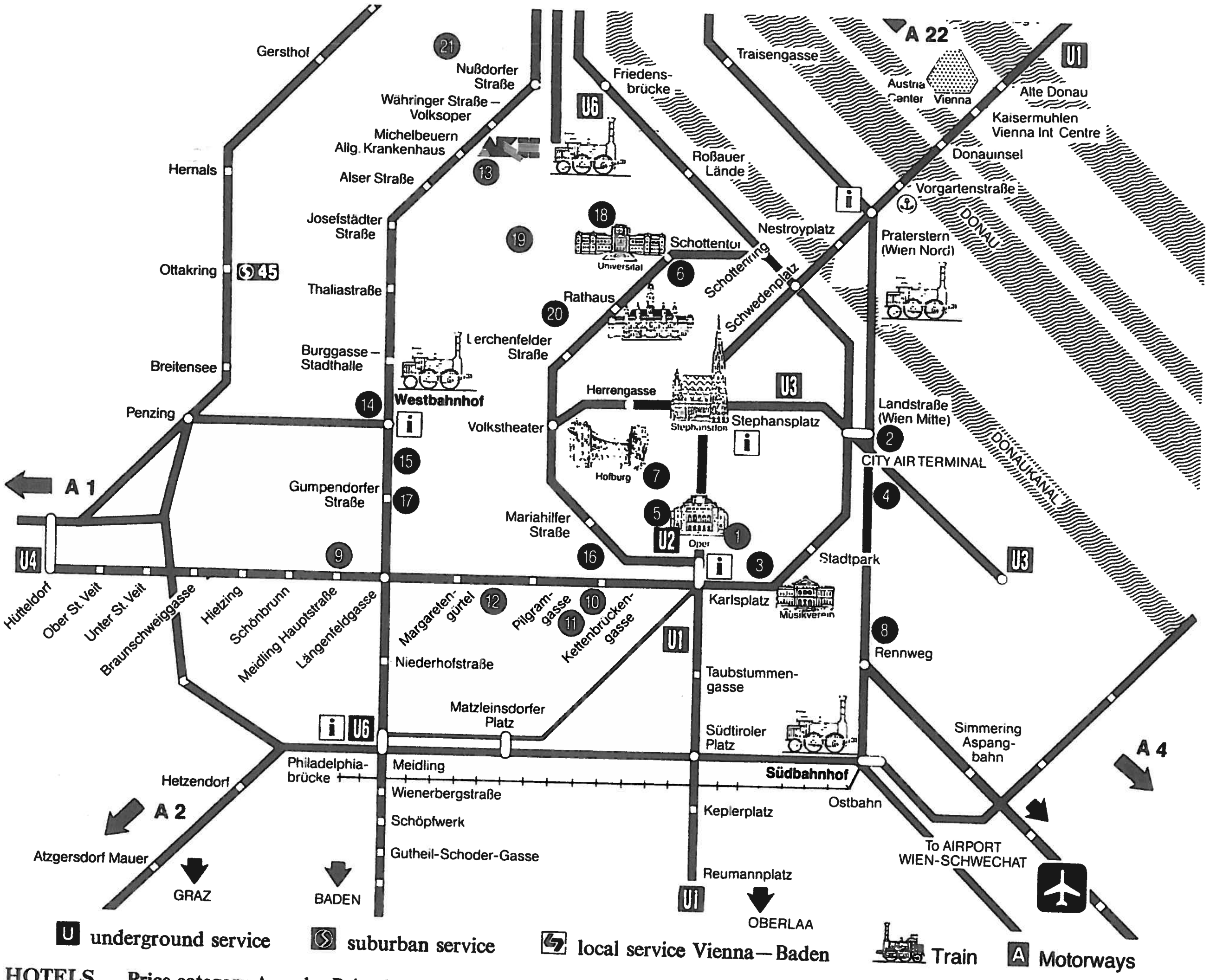
Berggasse
Schwarzspanierstr.
Garnisong.
Alser Straße
Währinger Straße
Hörlgasse
Kolingasse
Maria-Theresien-Str.
Schottenring
Ringturm
Börsegasse
Wipplingerstr.
Franz-Josefs-Kai
Votivkirche
Universität
Landesgerichtsstraße
Grillparzerstr.
Dr.-Karl-Lueger-Ring
Schottengasse
Renngasse
Maria am Gestade
Donau Kanal
Taborstraße
Praterstraße
Ruprechtskirche
Rotenturmstr.
Schwedenpl.
Urania
Rathaus
Freyung
Tiefer Graben
Am Hof
Bognerg.
Hoher Markt
Fleischmarkt
Burgtheater
Herrengasse
Stadiongasse
Dr.-Karl-Renner-Ring
Volksgarten
Kohlmarkt
Graben
Stephansdom
Wollzeile
Schulerstr.
Stubenring
Wienfluß
Parlament
Museumstr.
Hofburg
Heldenplatz
Augustinerstr.
Singerstraße
Kärntner Straße
Himmelpfortgasse
Annagasse
Parkring
Stadtpark
Landstr. Hauptstr.
Museen
Messeplatz
Burggasse
Burgring
Burggarten
Oper
Opernring
Babenbergerstr.
Eschenbachg.
Getreidemarkt
Opernpassage Information
Kärntner Ring
Schubertring
Johannesg.
Am Heumarkt
Linke Bahngasse
Lothringerstraße
Schwarzenbergpl.
Mariahilfer Straße
Secession
Musikverein
Konzerthaus
Gumpendorfer Straße
Rechte Wienzeile
Operng.
Wiedner Hauptstraße
Museum der Stadt Wien
Karlskirche
Linke Wienzeile
Margaretenstraße
Rennweg



HOTELS

Price category A

1 Bristol
2 Hilton
3 Imperial
4 Inter-Continental
5 Sacher

Price category B

6 De France
7 Europa
8 Penta
9 Ramada

Price category C

10 Alba Accadia
11 Alba Palace
12 Ananas
13 Astra
14 Austrotel
15 Ibis
16 Kummer
17 Pannonia
18 Regina

Price category D
(student hotels)

19 Academia
20 Atlas
21 Haus Döbling

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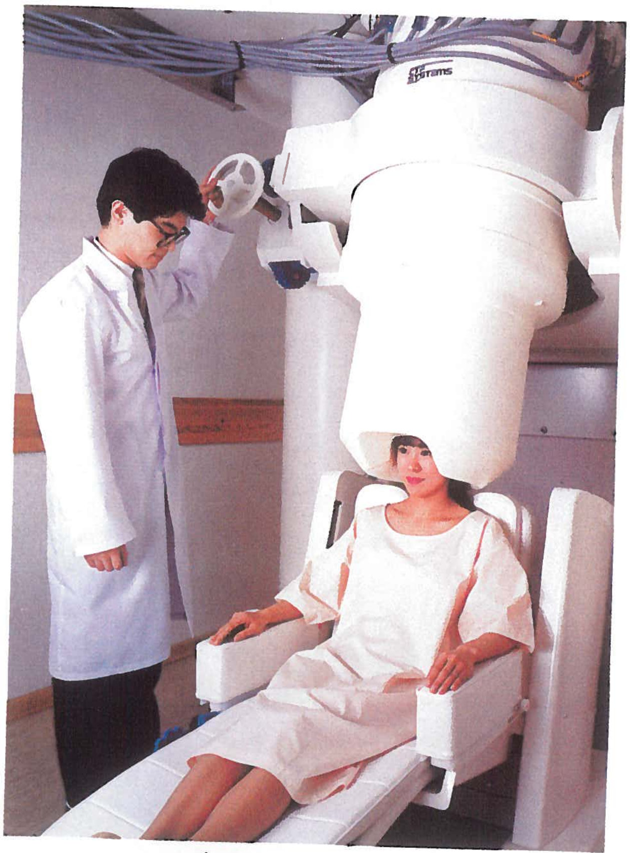
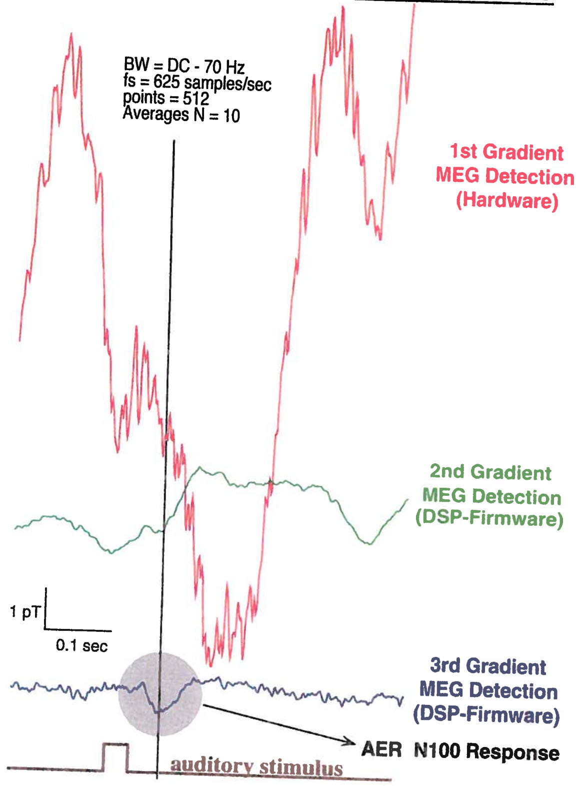
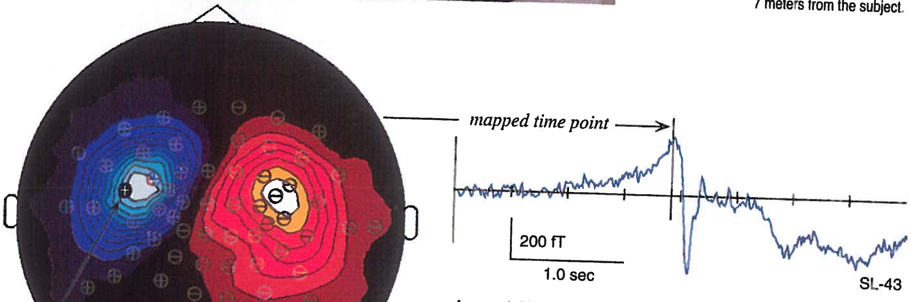


...and advanced noise cancellation



Comparison data for 1st, 2nd and 3rd order gradient detection of a 10 trial average, auditory evoked response (50 msec, 2 kHz tone, 2.5 - 3.5 ISI). Data was collected during the daytime, in an unshielded environment, with the addition of four rare-earth magnets in random motion 7 meters from the subject. Higher gradient orders were processed in real-time.



Averaged MEG response for a sustained, voluntary right index finger movement (100 trials; DC-40 Hz; 125 samples/sec). Recordings were made using on-line, 3rd order gradient detection within a shielded room. Contour color map shows widely distributed field activity for the time point immediately preceding movement onset. Stability of the pre-movement baseline accurately characterizes the slow activity accompanying the sustained phase.

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